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No Foreign Cash for SSC, Exiting DOE Chief Says

Before going out the door, the Bush Administration conceded that its many confident forecasts of heavy foreign financial aid for the Superconducting Super Collider (SSC) are unfounded, and urged Congress to put up a lump sum of $5.5 billion next year to assure completion of the project.

In a 25-page response to a request for end-game candor from Chairman George Brown (D-Calif.) of the House Science, Space, and Technology Committee, James Watkins, the departing Secretary of Energy, said it's time to give up on expectations of major foreign assistance. "We should not be in the position of allowing another nation to determine the schedule of this project which is important to the advancement of scientific knowledge and our technical leadership," Watkins stated.

Congressman Brown, long an SSC supporter, responded cautiously, observing that "this project's fate will be determined by the new Administration," thus suggesting that if

NSF Chief Heads for California—P.5
While NIH Director Stays Put—P.6

the Clinton White House opposes the project, he sees no chance of a salvation in Congress. So far, there's been no word from the new Administration. Candidate Clinton endorsed the SSC, but with the election campaign fading in memory, many promises are being left by the wayside.

One of the most persistent and entertaining critics of the SSC, Rep. Sherwood Boehlert (R-NY), described Watkins' full-funding proposal as "a real doozy," and noted that: "After telling Congress for five years that foreign governments would trip over themselves trying to get on board this project, we find that the only significant foreign contributions to date have come from sole-sourced contracts where we have paid foreign firms to build SSC components. Everyone is happy to take a contract paid for in US dollars," Boehlert stated in a press release. "But no one wants to write a check and lend a hand."

As a Republican in a Democratic House, Boehlert lacks political swat. But he's the ranking Republican on the Subcommittee on Science of the Science, Space, and Technology Committee, and thus can harass the project and contribute to the skepticism that many members already feel toward the SSC.

The fate of the SSC at this point is uncertain, with

(Continued on Page 6)

Clinton's Science Adviser Sails Through Senate Hearing

John H. Gibbons, the Clinton nominee for Director of the White House Office of Science and Technology Policy (OSTP), easily glided through an undemanding Senate confirmation hearing last week.

On the weekend prior to the hearing, Gibbons prepped with colleagues who fired nasty practice questions at him for nearly three hours. But the drill proved unnecessary. The real event oscillated between expressions of esteem for Gibbons' performance as Director of the Congressional Office of Technology Assessment (OTA) and respectful questions arising from politics' preeminent concern about research: What can it do for the economy? On that question, the emphasis was on technology and industry, with little

(Continued on Page 2)

In Brief

Frank Press, completing a second and final term as President of the National Academy of Sciences, has been awarded the Japan Prize, Japan's highest award for science and technology, for his contributions to seismology and natural-disaster hazard reduction. The prize, awarded annually since 1985, consists of a certificate, a gold medal, and 50 million yen, about $400,000.

After long negotiations, the editor of the New England Journal of Medicine, *Jerome Kassirer, has agreed to publish the peppery diatribe that Rep. John Dingell delivered last May on "Misconduct in Medical Research," in the annual Shattuck Lecture, customarily published in NEJM. Kassirer initially objected to Dingell's comments about the tactics of Robert Gallo, the renowned AIDS researcher, but noted in a letter to Dingell last month that "I have left the material on Gallo in this version now that the Office of Research Integrity has ruled him guilty of misconduct." The date of the forthcoming publication was not stated.*

The Subcommittee on Environment got the axe in response to new House rules requiring the Science, Space, and Technology Committee to shed one of its six subcommittees. Most of the environmental jurisdiction was assigned to a new Subcommittee on Technology, Environment, and Aviation, the core of which is the former Subcommittee on Technology and Competitiveness. Rep. Tim Valentine (D-NC) is the Chairman.

SGR's annual non-profit salary survey, normally published in December, will appear later this year—rescheduled to bring the publication date closer to the filings of the IRS forms from which the salary figures are taken.

. . . Technology Issues Dominated the Questioning

(Continued from Page 1)

said about basic science or the federal agencies responsible for its finance.

Washington isn't hostile or cool to science—far from it, as indicated by the reverence that Gibbons and several Senators expressed for basic research when the subject came up, which was briefly and not often. However, economic resurrection is the all-consuming goal of the Clinton Administration and the Democratic Congress, and that's what the Senators had on their minds.

Though the politicians of science believe, knowledgeably or by rote, that science eventually pays off, Clinton's economics-based victory dictates that early, visible industrial gains are indispensable—certainly prior to the 1994 Congressional elections. Hence, the concentration on government-financed technology and the route to commercialization through closer ties to industry.

Gibbons harmonized with the mood of the moment, leading a Chairman on the other side of Capitol Hill, Rep. George Brown (D-Calif.), of the House Science, Space, and Technology Committee, to proclaim the arrival of a new era. Immediately following the Gibbons hearing, Brown issued a press release declaring: "No longer is industrial policy a forbidden concept; Jack Gibbons today made it very clear that industrial policy isn't unAmerican, it's the smart thing to do."

The hearing, held on January 26, glowed with the halo that Gibbons acquired over the past 13 years as Director of OTA. Showering accolades on one of the most popular citizens of the Congressional community, the Senators received nominee Gibbons like a sage and mentor rather than an aspirant summoned to prove his merit.

Before the questioning began, three Senators who are not members of the Committee flanked Gibbons at the witness table and praised him to their colleagues at the Senatorial bench. Senator Ted Kennedy, Chairman of the Board that oversees OTA, assured the Committee members that Clinton had made "a brilliant appointment." Similar sentiments were expressed by the Senators from Virginia, where Gibbons resides, Chuck Robb and John Warner.

Gibbons provided few specifics about the new Administration's plans for R&D, the reason being that Clinton and company, preoccupied with organizing the government, haven't yet got down to that level of detail. But, in two hours before the Committee, Gibbons provided several clues about organizational matters and expressed his personal preferences on several basic issues of R&D policy, with the modest suggestion that the Clinton Administration is likely to value his opinion in these matters.

In a prepared statement, Gibbons sketched his professional experience, from basic physics research in academe to involvements in business and directorships prior to joining OTA in 1979, noting among many items: "an appreciation of what it takes to transform a technical innovation into a product and to successfully manufacture, sell and service it, while generating sufficient profit to stay ahead of the inevitable competition and have a little left over!"

To which the statement added, "I believe that experience will serve me well as I work with the President to build new, productive bridges of cooperation and co-venturing between the private sector and the people of this nation."

Among the major points made by Gibbons:

- True to Clinton's election vows, Vice President Gore will occupy a major role in orchestrating federal technology and environment programs.
- He expects that Gore's political muscle will enhance the authority and power of the Federal Coordinating Council for Science, Engineering, and Technology, a subcabinet of federal R&D officials that Gibbons will chair as Director of OSTP.
- For promoting industrial technology, Gibbons personally favors working with the existing federal structure, rather than creating new agencies. He expressed reservations about establishing a civilian version of the Defense Advanced Research Projects Agency, while praising the industry-promoting potential of the National Institute of Standards and Technology.
- Shifts of substantial funds from defense to civilian R&D will not take place abruptly, but will occur over a matter of years.
- National laboratories should be subject to competition for funds and receive greater scrutiny through peer review.
- Animal experimentation is justified when there is no alternative, but technology is providing non-animal methods that should be encouraged. Gibbons also expressed concern about insufficient ethical attention to the use of animals in research.

Responding to windy Senatorial questions that often wandered aimlessly over wide regions of government affairs, Gibbons told Senator Conrad Burns (R-Montana) that Clinton and Gore regard R&D as a "fundamental component of the Administration's attempt to develop options to enable our nation to recover economically and prepare the seed ground for the years ahead." Noting that the President

(Continued on Page 3)

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Editor and Publisher **Daniel S. Greenberg**
Associate Publisher **Wanda J. Reif**
Circulation Manager **Glen D. Grant**

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. . . Gibbons States Concern About Use of Animals

(Continued from Page 2)

had appointed him to the National Economic Council, Gibbons said, "I feel that they not only feel that science is important, but science and technology are intimately related to our national economic agenda...."

In response to Burns' requests for specifics, Gibbons said, "No, we have not gone into those details. I think they're probably waiting for me to come forth and give them what I think is my best shot. And I'm not there yet...." He said that R&D issues would be discussed at a meeting of the senior White House staff at Camp David on the coming weekend.

Asked about electronic "highways," pushed by Gore when he was in the Senate, Gibbons expressed enthusiasm, rattling off the many economic, educational, and cultural wonders to be anticipated from simplified communications and access to data banks. But he also observed, "I would be much happier seeing the highway expand as the demand pulls that highway along," rather than, he suggested, building the highway in the expectation of attracting traffic. Though rich with policy implications, that expression of preference seemed to pass unnoticed by the Senators.

On the passion-ridden issue of animal rights, Gibbons, in response to a question by Senator Burns, gave a lengthy and obviously heartfelt reply (presented here almost verbatim):

"I'm particularly interested in the native American concept of the use of animals," Gibbons said. "When the American Indian killed an animal for food and shelter, the Indian always said a prayer of thanksgiving to that animal for having given up its life so that the person might live.

"I think we sometimes don't give enough attention to that notion of the ethical use of our power over the rest of the world," he continued. "And to that extent, I feel very strongly we should be thinking much more strongly like the native American as we use animals. I do use animals. I've raised cattle, I understand and appreciate very much the importance of the use of whole animals in doing whole-body research.

"You have to think about the whole organism in developing medical science, in understanding how these things work," Gibbons stated. "At the same time, as we showed in an OTA study several years ago, there are an enormous number of technologies that now make it possible to do the kind of testing and research and teaching without having to sacrifice animals as we do. And in fact, the marketplace is now responding to that, because it not only turns out to be more effective, but less expensive. Technology is setting aside a lot of the traditional uses of animals in such things as testing foods and cosmetics and the like. And I applaud the application of thoughtful high technology to substitute for animal use."

He concluded the reply by emphasizing: "I do not believe that we should forbid using animals entirely. I think that's simply not defensible."

Asked by Sen. John Kerry (D-Mass.) about the role he would play in the Clinton Administration, Gibbons said that he would be the President's "honest broker" on R&D matters, and work closely with Gore in the Vice President's role as orchestrator of federal technology programs.

"I'm only one voice," Gibbons said, "but I see myself as the honest broker to the President on the technology and science perspective with decisions he needs to make or things that I need to bring to his attention. On the other hand, he has delegated, and I think properly—and I'm enthusiastic about this—to the Vice President to take leadership in this with his extraordinary personal interests and capabilities to pursue the issues of environment and technology.

"So, I expect," Gibbons continued, "that as Director of OSTP, I will be spending a lot of time with the Vice President in particular on this. And I find this very hopeful, because in times past, the Federal Coordinating Council on Science, Engineering, and Technology, which is charged with trying to integrate and coordinate the programs across the agencies, has had a difficulty in that the convening power of the Director of the Office of Science and Technology Policy is obviously less than that of the Vice President.

"So, I hope to engage him in that process," Gibbons explained, "because he has the strength and the standing to help assure that we can successfully reintegrate these issues across the agencies of government...."

Asked by Kerry about the pace of major shifts from military to civilian R&D, Gibbons cautioned against great expectations. "It's something that's going to have to take place not over weeks or months but over a period of years," he said, adding: "It will be wasteful, in many instances, just to chop things off and try to create something new on the side. But it is a shift that is logically being driven by the changing notion of what our national priorities are in the wake of the ending of the Cold War."

As for the often-spoken-of civilian DARPA, Gibbons responded that "The idea of a civilian equivalent of the Defense Advanced Research Projects Agency is in some ways appealing if you think about acquiring new institutions. But at this point in time, although I want to give it considerable extra study, it seems to me the most opportune way to go is to fully utilize the resources that we already have.

"By fully utilizing, I mean, for example, to introduce a new element of priorities and procedures in the national labs, so that the work they do is increasingly not only fulfilling mission-focused activities but also joint venturing work, joint projects with the private sector. And I think that can be done on a competitive basis, in which the funds will flow to those who have the best idea and the most success at making these transitions."

He spoke favorably of the National Institute of Standards and Technology, for which candidate Clinton pledged a

(Continued on Page 4)

. . . Says National Labs Should Compete for Funds

(Continued from Page 3)
budget doubling, describing NIST's industrial programs as "an excellent way to go, to expand that operation, and to use the advanced research projects that they are doing."

Gibbons added, "I think we can do a better job of introducing competition into the funds that go within the federal government to the national labs, for example," noting that "the resources are already built, the facilities are there, the people are there.... If we can capitalize on those resources, orchestrate them—NIST, the national labs, the other federal resources—orchestrate them in a more coherent way, I believe we'll be a lot better off."

The issue of federal R&D largess expended on national labs when academe is hardup for federal funds was brought up by Senator John Danforth (D-Mo.). Danforth, brother of William Danforth, Chancellor of Washington University, suggested that many of the federal labs had outlived their purposes and the money could be better spent in universities. Would Gibbons favor a review of the labs? Danforth asked.

On this issue of high political sensitivity, Gibbons replied cautiously: "The federal labs represent a very major public investment in research and development, and they merit not just a review, but a constant review, it seems to me, by their own peers. It's true that there's 700-odd of them there," Gibbons said. "There's a lot of monies that flow into those labs from their various sponsoring agencies. To a degree, we have had reviews every few years over the past decade.... And most of those reviews have turned out to have a bottom line that says the science that goes on there is very good, very notable. There have been issues raised, however, about how well the information developed there moves on out, not just into the scholarly journals, but how well the technologies developed there move on out into the marketplace."

He pointed out, however, that the end of the Cold War has virtually eliminated the nuclear-weapons role of the labs. "Time has caught up very quickly with some of the largest of the labs, and these are the very labs that underwent the greatest expansion during the 1980s, when some of those labs' budgets were doubled.

"I therefore believe," Gibbons stated, "that as we review the assets of the federal system in science and technology that the national labs have to come early on the list of things to look at. How well they may have done in past years may now be anachronistic. It's a question of how well are they doing compared to the new kinds of problems and imperatives that are before us....

"I believe the oversight of the labs could well benefit from having not just the mission agencies themselves involved, but also some other folks that might be representative of the kind of downstream customers outside the agencies' own missions. It's very important to have them at the start, rather than at the end."

Recalling the emphasis on technology throughout the hearing, Danforth said, "I hope you're not downgrading the role of basic research."

Gibbons replied, "I'm glad you raised that question," and proceeded into an encomium on the spiritual and economic value of basic research.

Several questions were asked about the Space Station and the Superconducting Super Collider. But, apart from expressing support for international cost-sharing of these and future mega-projects, Gibbons said nothing about how they might fare in Clinton's budget priorities. He was not pressed on the issue.

When the hearing was over, one of the many academic lobbyists in the audience remarked with dismay, "I don't think they mentioned NSF once." Not quite true, but very close to it, and not surprising. Science must register a new reality in Washington. It's the economy, stupid. And what can basic research do for the economy real fast? Nothing.

That doesn't mean that basic science is out in the cold. Modern government does appreciate the longterm value of science, and besides, politicians couldn't bear the scorn that would ensue from outrageously retrograde policies toward science. Support will continue at reasonably high levels, but growth will be slight or non-existent while pressures will increase for evidence of economic value.—DSG

Job Changes & Appointments

Slated to move with John Gibbons from the Congressional Office of Technology Assessment to the White House Office of Science and Technology Policy are ***Lionel (Skip) Johns***, Assistant Director of OTA's Energy, Materials, and International Security Division, and ***Henry Kelly***, Senior Associate in the Division. Also making the move: ***Holly L. Gwin***, OTA General Counsel.

Meanwhile, ***Roger Herdman***, Assistant Director of OTA's Health and Life Sciences Division, has been appointed Acting Director.

Roberta Balstad Miller, Director of the Division of Social, Behavioral and Economic Research at the National Science Foundation, has been appointed President and Chief Executive of the Consortium for International Earth Sciences Information. Located in Saginaw, Michigan, the Consortium conducts research and circulates information about global change.

Terry Hartle, Staff Director of the Education Office on the Senate Labor and Human Resources Committee, has been appointed Vice President for Government Relations for the American Council on Education.

Gary B. Ellis, Director of the Division of Health Promotion and Disease Prevention at the Institute of Medicine, has been appointed Director of the Office for Protection from Research Risks at the National Institutes of Health.

Jarus Quinn, Executive Director of the Optical Society of America, has announced he'll retire by next September.

Massey Quits NSF for Top UC Vice Presidency

He jumped for a great professional opportunity—he wasn't pushed. That's the reason behind Director Walter Massey's decision to leave the National Science Foundation, two years into a six-year appointment, for the number two post in the statewide University of California system, Senior Vice President for Academic Affairs and Provost.

At age 54, Massey will be serving under UC President Jack Peltason, who took office last fall at age 68.

Coming just a week after Bill Clinton's inauguration, the announcement inevitably raised suspicions that Massey anticipated he would be swept out in a change-of-Administration housecleaning. Though the statutory six-year term was intended to insulate the NSF Directorship against political change, tenure is at the pleasure of the President. But throughout its 43-year history, NSF has been exempted from politically flavored shifts. Vowing a fresh start in his hoped-for second term, George Bush demanded resignations from all his appointees, with the exception of Massey and a few others.

Nonetheless, if Clinton wanted him out, Massey would have to go. But inquiries in the science wing of the new Administration indicated that Massey was welcome to stay on and that there was no sentiment for his departure.

Massey, however, had ample reason to feel frustrated in his short tenure at NSF. The Foundation's appropriations subcommittees had taken to micromanaging his budget—with emphasis on pushing NSF into closer ties with industry. Ironically, Massey's own efforts to put NSF in harmony with political demands for utilitarian research aroused resentment among NSF's traditional basic-research clientele.

In developing a strategic plan for NSF, Massey warned that if the Foundation didn't seek to expand its role, budget growth would flow to other federal agencies. Last September, in collaboration with Massey, the National Science Board, NSF's policymaking body, created the Commission on the Future of NSF, to examine options. Reporting on November 20, the Commission essentially told NSF to stick to its traditional roles, observing that: "Redirecting NSF's activities from research and education would have little or no effect on the US competitive position in the near term, but would severely restrict prospects for the long term."

The NSF staff never warmed to Massey, who was widely regarded there as aloof and surrounded by a "palace guard" that shielded him from contact with the rank and file.

The UC Regents are scheduled to vote on Massey's appointment on February 18, and he plans to leave NSF in April.

Massey's short tenure was not the shortest in NSF history. John Slaughter served from December 1980 to October 1982, before going to the presidency of the College Park campus of the University of Maryland. And Edward Knapp served from November 1982 to August 1984 before returning to the Los Alamos National Laboratory. Alone among NSF directors in recent years, Erich Bloch, Massey's immediate predecessor, served the full six-year term.

In Quotes: Doubts About Future of Energy Dept. Labs

From the report on Energy Issues *in the Transition Series of the General Accounting Office.*

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For the past 45 years, DOE's national laboratories have spent billions of dollars building the nation's nuclear arsenal and conducting research in basic science and energy technologies. Funded at over $7 billion and staffed with over 50,000 scientific and other personnel, DOE's nine multiprogram laboratories constitute a valuable national resource. Today, the laboratories face increasing pressures to reorient their work towards more immediate national needs.

The dramatic reduction in the arms race ... has raised serious questions about the future role of the three large laboratories devoted primarily to designing nuclear weapons. Furthermore, all of the laboratories face increasing pressure to direct their talented staffs and facilities to address current national priorities, such as improving the nation's economic competitiveness, clearing up the environment, and developing US infrastructure. In an era of growing budget deficits, the laboratories can no longer assume that basic research—although highly regarded within the scientific community—will be funded at previous levels without more evidence of useful applications.

Both DOE and its laboratories have begun taking steps to address the situation. The laboratories already conduct research in areas potentially useful to industry.... However others from outside the research community question whether this transition is worthwhile or can be successful and have suggested reassessing the need for facilities that have accomplished their missions.

All these factors increase the pressure on DOE to outline future directions for its laboratories.... However, DOE's complicated management structure—through which laboratories report to different field offices and assistant secretaries—makes both mission direction and laboratory management difficult. Indeed, many fear that the current system may lead to gridlock at the laboratories....

Energy Issues (GAO/OCG-93-13TR; 31 pp., no charge), order from: USGAO, PO Box 6015, Gaithersburg, Md. 20877; tel. 202/512-6000.

Whether Temporary or Permanent, Healy's Still There

All packed up and ready to go on the eve of Clinton's inauguration—and reportedly peeved at the Bush Administration's absence of gratitude for her devotion to duty—Bernadine Healy remains at the helm of the National Institutes of Health, following a last-minute reprieve of unknown duration.

In a transition characterized by testiness between the incoming and outgoing Presidents, the Healy episode was part of a confusing process that for a time created doubt about who, if anyone, was in charge of many of the agencies of the US government.

The story goes back to last October, when Bush, trying to salvage his sinking reelection campaign, proclaimed that he would bring in fresh talent for a second term and requested letters of resignation from hundreds of his appointees.

Healy complied, but appended a request to remain until a successor was nominated to assure continuity in the management of NIH. She told SGR last week that she did so to avoid a repetition of the long interregnum—20 months—that preceded her arrival at NIH in April 1991. Receiving no reply, Healy assumed she would leave with the Bush Administration at noon on January 20, and packed to return to Cleveland, where her family lives.

In the meantime, Clinton and company, slow in making subcabinet appointments, asked Bush to retain a senior Presidential appointee or two in the agencies to keep things running until the new President decided on staffing. Bush initially declined the request, telling the Clinton camp that if they wanted to retain his appointees, they should nominate them and await confirmation by the Senate. Legal wizards suggested appointing the resigned officials as consultants and sending them back to their former offices.

At the last minute, however, Bush agreed to retain some 40 senior officials, including Healy, David Kessler, the Commissioner of the Food and Drug Administration, and Daniel Goldin, Administrator of NASA. The turnabout came so late that many news reports had them all gone, including *Nature*'s of 21 January, which headlined its account, "Healy, Hundreds of Others Exit with Bush."

Healy told SGR she believed that her retention was requested either by the transition team for the Department of Health and Human Services or the new Secretary of HHS, Donna Shalala. She said the outgoing Secretary, Louis Sullivan, telephoned and asked her to stay.

The assignment could continue indefinitely, or Healy could soon be out. She leaves no doubt, however, that her preference is to remain Director of NIH.

But, as usual with the hyper-energetic Dr. Healy, rumors abound, the latest being that she's investigating a run for the Republican nomination for the US Senate in Ohio in 1994, when Howard Metzenbaum is up for reelection. SGR checked with political reporters in Ohio and with the Chairman of the State Republican Committee, all of whom said it's news to them.

Supercollider *(Continued from Page 1)*

predictions of doom and completion in ample supply among observers of the prolonged and successful campaign to bring the project to the psychological point of no return.

With the funds available for this fiscal year, expenditures will soon reach $2 billion, toward a total estimated construction cost of about $8.4 billion. To make that figure more palatable, the Department of Energy, under Congressional prodding, repeatedly assured Congress that $1.7 billion would come from abroad.

When Europe declined the invitation to contribute, DOE expressed confidence that Japan would deliver large sums. As an inducement, DOE offered the Japanese part ownership of the huge accelerator, with commensurate representation on the board of governance and in the management. The Japanese said they would study the situation—their standard reply to all entreaties for money for the SSC. Apparently, they're still studying it. In his letter to Congressman Brown, Watkins states that "Without a significant contribution from Japan, it is highly doubtful that the one-third foreign-funding goal can be met."

DOE claims that by fiscal 1999 it will have some $400 million of "in-kind" foreign contributions. But virtually all of that sum is a bookkeeping mirage, calculated on the basis of lower prices abroad for various components and materials, with the difference between foreign and domestic prices deemed foreign "contributions." A "contribution" of $53 million is listed for Russia, where American organizations are signing up topnotch researchers for less than $100 a month.

Termination of the project would be just a drop in the bucket of deficit reduction, but would create a political row that Clinton might prefer to avoid. In line with well-established strategy for pushing big projects through the Congress, the SSC's planners have distributed contracts to some 40 states, thus creating a constituency for the project.

Employment under these contracts, plus the crew building the project at the site near Dallas, totals some 7000 jobs—a figure often cited when the House voted to continue the project last year after initially voting it down.

In his response to Brown, Watkins, a retired Admiral, said that for funding the SSC, the government should adopt the Navy's method of financing shipbuilding. "Once a shipbuilding project is mature enough to move out of R&D," Watkins stated, "it is *fully funded* for construction of the entire ship at one time."

The chance of getting $5.5 billion all at once can be rated at zero in deficit-obsessed Washington. More likely is another helping in the neighborhood of $500 million—this year's figure—which would serve the purpose of making the project too expensive to kill.—DSG

More IN PRINT: Materials, Machine Translation, Etc.

(Continued from Page 8)

drugs, biologics, and medical devices. The study, requested by Commissioner David Kessler shortly after his arrival at FDA in 1990, resulted in some 40 recommendations, principal among them that FDA clarify and codify its conflict-of-interest regulations, cast a wider net for expert advisers, and put more emphasis on staff training in the intricacies of using outside advisers. The report was produced by a 15-member committee chaired by Lawrence E. Early, Professor of Medicine, University of Pennsylvania. Richard A. Rettig of the IOM staff served as Study Director.

Order from: National Academy Press, 2101 Constitution Ave. NW, Washington, DC 20418; tel. 1-800/624-6242; in the Washington, DC, area: 202/334-3313.

Towards a New Materials Paradigm (21 pp., no charge), by Louis J. Sousa, Technology Policy Analyst in the US Bureau of Mines, observes that the US industrial economy has shifted away from processing of bulk materials to sophisticated products engineered to end-users' specifications. The evolution is reflected in industrial changes as well as in academe, Sousa notes, pointing out that the MIT Department of Metallurgy of the 1950s has since metamorphosed into the Department of Materials Science and Engineering. However, the report says, federal data gathering and policy formulation remain tied to the antiquated concepts of materials as natural resources.

Order from: Publication Distribution, Bureau of Mines, Cochrans Mill Rd., PO Box 18070, Pittsburgh, Pa. 15236; tel. 412/892-4338.

Focus (8 pp., no charge), monthly newsletter of the National Center for Manufacturing Sciences, a federally assisted consortium founded in 1986 to boost high-tech industry and promote R&D collaboration. Recent issues include articles on federal and state programs to assist manufacturers, US R&D spending compared to other countries', Congressional actions, etc. The contents reflect the steady growth of government-backed programs focused on civilian industry.

Order from: National Center for Manufacturing Sciences, Strategic Development Staff, 900 Victors Way, Ann Arbor, Michigan 48108; tel. 313/995-0300.

Released in the waning hours of the Bush Administration, three reports from the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET), the government-wide subcabinet of federal S&T officials. The publications are each available from the address listed:

Federal Research Programs in Superconductivity (35 pp.), reports combined support from federal agencies in this field totaled $250 million in fiscal 1992, more than a six-fold increase from the sum in 1986, when high-temperature superconductivity was first reported.

Order from: US Department of Energy, Materials Sciences Division, Office of Basic Energy Sciences, attn. William Oosterhuis, Washington, DC 20585; tel. 301/903-3426.

Machine Translation Technology: A Potential Key to the Information Age (Report PB93-134336; 51 pp., $19.50 paperback; $9 microfiche), says machine translation [MT] is increasingly important for American competitiveness because of the large volume of non-English scientific and technical publications.

Order from: National Technical Information Service, 5285 Port Royal Rd., Springfield, Va. 22161; tel. 703/487-4650.

An Overview of Federal Food Safety Research, Including Emerging Research Needs for the Future (112 pp., no charge), describes the work of the 21 federal agencies involved in food-safety research, reported to total some $200 million a year. Improvements are necessary, the report states, because of increased public concern about nutrition and health, the growth of foreign imports, and controversies over genetically engineered products and irradiation of foodstuffs.

Order from: US Department of Agriculture, Assistant Secretary for Science and Education, attn. Mike Hoback, Washington, DC 20250; tel. 202/720-5035.

Physics News in 1992 (97 pp., $5 for one, $3 for each additional copy), 23d in an annual series from the Public Information Division of the American Institute of Physics, with articles, provided by AIP member societies, reporting major experimental results, development of instruments, etc.

Order from: American Institute of Physics, c/o AIDC, 64 Depot Road, Colchester, Vermont 05446; tel. 1-800/488-2665; in Vermont, 802/875-0315.

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IN PRINT: Japanese Math Exams, Rocky Flats, Etc.

The publications listed are obtainable as indicated—not from SGR.

Japanese University Entrance Examinations in Mathematics (31 pp., $7.50 per copy, less for bulk orders), from the Mathematical Association of America, translation of problems and answers from the University Entrance Center Examination, described in an accompanying press release as "Japan's version of the mathematics portion of the Scholastic Aptitude Test," plus materials from examinations given by individual universities. The publication offers no comparisons with other countries, but the press release states that, unlike American multiple-choice tests, the Japanese tests are structured in a way that virtually rules out correct guesses. "This new report," it adds, "shows that not only do Japanese high school students learn a great deal of mathematics, but they are able to do far more than regurgitate facts learned by rote." The report was edited by Ling-Erl Eileen T. Wu of Menlo College, Menlo, Calif.; the project was supported by the Sloan Foundation.

Order from: Mathematical Association of America, 1529 18th St. NW, Washington, DC 20036; tel. 202/234-9570; fax 202/462-7877.

The Prosecution of Environmental Crimes at the Department of Energy's Rocky Flats Facility (144 pp., no charge), from the Subcommittee on Investigations and Oversight of the House Science, Space, and Technology Committee, says, "Serious environmental crimes were committed, but no individuals were held responsible" for plutonium and other types of contamination at the Rocky Flats (Colorado) nuclear-weapons facility, operated for DOE by Rockwell Inc. Under a plea agreement last June, Rockwell pled guilty to a flock of criminal and felony counts under various environmental statutes and paid a criminal fine of $18.5 million—which led to the rare occurrence of members of a federal grand jury gagging in disgust and protesting the outcome. The report was completed at the end of the last Congress under the Chairmanship of Rep. Howard Wolpe (D-Mich.), who was redistricted out of Congress. Wolpe bequeathed it to the incoming Congress, noting that a lot more dirt remains to be excavated.

Order from: US House of Representatives, Subcommittee on Investigations and Oversight, Committee on Science, Space, and Technology, House Annex I, Room 822, Washington, DC 20515; tel. 202/225-4494.

Technology Transfer: Barriers Limit Royalty Sharing's Effectiveness (GAO/RCED-93-6; 128 pp., no charge), from the General Accounting Office, investigative service for the Congress, reports paltry results from the 1986 Federal Technology Transfer Act, which offers federal researchers a share of royalties from commercialization of their work by private industry. The GAO found, however, that the financial rewards are generally too small to stir capitalist instincts in government ranks—often only a few hundred dollars. Reporting on discussions with government researchers, the report notes that many of them said peer recognition outweighs financial rewards, but the GAO conveys the impression that bigger payoffs might make a difference. The report covers tech transfer activities in the major federal agencies.

Also from the GAO: ***High Risk Series*** (GAO/HR93-1 through 93-17) and ***Transition Series*** (GAO/OCG-93-1 through 93-27), two separate series of reports (44 in all), each about 35 pages, covering virtually all departments, agencies, and major programs of the federal government, specially prepared for Congress on the eve of the Presidential transition. "High Risk" refers to agencies and programs that GAO considers to be in one kind of trouble or another.

Order from: USGAO, PO Box 6015, Gaithersburg, Md. 20877; tel. 202/512-6000.

Report of the FASEB Consensus Conference on FY 1994 Federal Biomedical Research Funding (24 pp., no charge), the annual budgetary pipedream from the Federation of American Societies for Experimental Biology, a coalition of eight societies that champions "little science" in this era of the mega-project. The report, derived from a biomedical pep rally last November, is essentially a wish list for the life-sciences budgets that will go into effect next October 1 at NIH, NSF, the Department of Veterans Affairs, NASA, and EPA. Never shy, the FASEB conferees declared that NIH—the key to happiness for most of the Federation's members—"should be provided with a 13.4 percent funding increase..." Maybe it "should," but growth of that scale is unlikely with Clinton's Office of Management and Budget in the hands of zealous deficit cutters, Director Leon Panetta and Deputy Director Alice Rivlin.

Order from: Office of Public Affairs, 9650 Rockville Pike, Bethesda, Md. 20814; tel. 301/530-7075; fax 301/530-7190.

Technology Applications Report (79 pp., no charge), from the Strategic Defense Initiative Organization, describes some 50 SDI-developed technologies with civilian potentials, noting the items listed are a small fraction of the SDI inventory available to industry and other users. Among the technologies are medical imaging, CFC-free refrigeration, electric storage, motion sensors for auto safety, and optical data-storage techniques.

Order from: Office of Technology Applications, Strategic Defense Initiative Organization, The Pentagon, Washington, DC 20301-7100; tel. 703/693-1563.

Food and Drug Administration Advisory Committees (226 pp., $33, plus $4 for shipping), from the Institute of Medicine (IOM), health-policy wing of the National Academy of Sciences, a review of the ground rules and operations of the 41 standing committees that advise the FDA on human

(Continued on Page 7)